CLAIMS

Having thus described the invention, what is claimed is:

1. A spinal plate assembly, comprising:

(a) a spinal plate, said spinal plate having a length and comprising a top surface, a bottom surface opposite the top surface, the bottom surface being suitable for being positioned adjacent bone structure of a recipient user, and a plurality of bone-fastener-receiving apertures; and

(b) a resiliently movable retaining element mounted to said spinal plate, and extending between first and second ones of said bone-fastener-receiving apertures, and extending into at least one of said bone-fastener-receiving apertures, said retaining element being effective, when a bone fastener is driven through a said aperture into bone structure of such recipient user and past said resiliently movable retaining element, as a consequence of driving such bone fastener, to activate a blocking feature of said spinal plate assembly, which blocking feature inhibits the bone fastener withdrawing out of said spinal plate assembly and past said retaining element.

2. A spinal plate assembly as in Claim 1 wherein said retaining element comprises a plastic composition which is safe for use in living human or animal bodies, as an implantable plastic, and which retaining element has suitable strength, rigidity, and deflection properties to perform retaining functions in a routine implant use environment.

3. A spinal plate assembly as in Claim 2 wherein the plastic composition of the retaining element comprises one or more materials selected from the group consisting of polyetherimide copolymer, acetal copolymer, polyethersulfone, polyarylethersulfone, polycarbonate, ultra high molecular weight polyethylene,

polyetheretherketone, and polyaryletherketone, and blends and mixtures of said materials.

4. A spinal plate assembly as in Claim 2 wherein the plastic composition of the band comprises at least one of polyetheretherketone and polyaryletherketone.

5. A spinal plate assembly as in Claim 2 wherein the plastic composition of the band comprises polyetheretherketone.

6. A spinal plate assembly as in Claim 2 wherein the plastic composition of the band comprises polyaryletherketone.

7. A spinal plate assembly as in Claim 1 wherein composition of said spinal plate comprises at least one of titanium and titanium alloy.

8. A spinal plate assembly as in Claim 1 wherein composition of said movable retaining element comprises at least one of titanium, titanium alloy, and stainless steel.

9. A spinal plate assembly as in Claim 2, said retaining element comprising a resiliently movable band, a length of said band extending alongside, and extending across a portion of, one or more corresponding ones of the apertures, composition and structure of said resiliently movable band being adapted such that, as such bone fastener is driven alongside and past said movable band, said movable band can respond to transverse urging of such bone fastener thereby to move transversely of the length of said band, from a first position, until a control structure on such bone fastener is driven past the band, whereupon the band can return to the first position and overlie the control structure of the so-driven bone fastener and thereby prevent the bone fastener from withdrawing.

10. A spinal plate assembly as in Claim 2, said retaining element comprising a resiliently movable band, a length of said band extending alongside, and extending across a portion of, one or more corresponding ones of the apertures, composition and structure of said resiliently movable band being adapted such that, as such bone fastener is driven alongside and past said movable band, said movable band can respond to transverse urging of such bone fastener thereby to move transversely of the length of said band, from a first position, until a control structure on such bone fastener is driven past the band, whereupon the band can return to the first position and overlie the control structure of the so-driven bone fastener and thereby prevent the bone fastener from withdrawing.

11. A spinal plate assembly as in Claim 1, said retaining element comprising a resiliently flexible band, a length of said band extending alongside and extending across a portion of, one or more corresponding ones of the bone-fastener-receiving apertures.

12. A spinal plate assembly as in Claim 1, said spinal plate further comprising a channel extending downwardly from the top surface of said spinal plate, the channel having opposing side walls thereof opening into and extending alongside ones of said plurality of bone-fastener-receiving apertures, said retaining element being disposed in said channel and extending along the channel.

13. A spinal plate assembly as in Claim 2, said spinal plate further comprising a channel extending downwardly from the top surface of said spinal plate, the channel having opposing side walls thereof opening into and extending alongside ones of said plurality of bone-fastener-receiving apertures, said retaining element being disposed in said channel and extending along the channel.

14. A spinal plate assembly as in Claim 10 wherein at least all except two of said bone-fastener-receiving apertures comprise slots, all of said slots having

commonly oriented axes along elongate dimensions of said slots, thus enabling longitudinal movement of such bone fasteners in said slots, with respect to said spinal plate, after said spinal plate assembly has been installed in a recipient user.

15. A spinal plate assembly as in Claim 14 wherein all of said bone-fastener-receiving apertures comprise slots.

16. A spinal plate assembly as in Claim 10 wherein first and second ones of said bone-fastener-receiving apertures comprise circular openings.

17. A spinal plate assembly as in Claim 10 wherein all said bone-fastener-receiving apertures comprise circular openings.

18. A spinal plate assembly as in Claim 1 wherein said movable retaining element extends along substantially the full length of said spinal plate.

19. A spinal plate assembly as in Claim 1, said movable retaining element comprising a movable retaining band, and including a second movable retaining band and wherein the first and second movable bands extend along substantially full lengths of respective first and second sides of the channel, said first and second movable bands collectively extending along the sides of all of the bone-fastener-receiving apertures.

20. A spinal plate assembly as in Claim 3, said movable retaining element comprising a movable retaining band, and including a second movable retaining band, having a composition corresponding to the composition of the first movable retaining band, and wherein the first and second movable retaining bands collectively extend along the sides of all of the bone-fastener-receiving apertures.

21. A spinal plate assembly as in Claim 3, said movable retaining element comprising a movable retaining band, and further comprising a band retainer securing said movable band to said spinal plate while accommodating limited movement of said movable band while said band is secured to said spinal plate.

22. A spinal plate assembly as in Claim 10, further comprising a resiliently movable retaining band, and one or more band retainers mounting said movable retaining band to said spinal plate.

23. A spinal plate assembly as in Claim 10, further comprising a second resiliently movable retaining band, and wherein said movable retaining bands are properly positioned with respect to said apertures so as to let control structure on a respective such bone fastener pass below a respective said movable retaining band, with resilient movement of said movable retaining band, and without exceeding a flexural limit of said movable band, such that said movable band returns to a blocking position over such bone fastener after such control structure on such bone fastener passes below the respective said movable retaining band.

24. A spinal plate assembly as in Claim 10, further comprising a band retainer securing said movable retaining band to said spinal plate at loci away from the bone-fastener-receiving apertures.

25. A spinal plate assembly as in Claim 13, said spinal plate being elongate, said bone-fastener-receiving apertures being arrayed in first and second rows along a length of said spinal plate, said spinal plate assembly further comprising a second resiliently movable retaining band, wherein said first and second resiliently movable retaining bands are mounted at the opposing side walls of the channel, and extend along a portion of the length of the channel where the channel opens into the bone-fastener-receiving apertures.

26. A spinal plate assembly as in Claim 25 wherein at least two of the bone-fastener-receiving apertures comprise slots, and wherein all of said bone-fastener-receiving slots have commonly oriented elongate axes.

27. A spinal plate assembly as in Claim 3, said retaining element comprising a resiliently flexible band, a portion of a length of said band being positioned alongside, and extending across a portion of one or more of the apertures.

28. A spinal plate assembly as in Claim 27, including an intermittent channel (26) extending along the length of the spinal plate, and intermittently expressed adjacent the apertures.

29. A spinal plate assembly as in Claim1, said retaining element comprising a resiliently flexible band, a portion of a length of said band extending across a portion of at least one of the apertures, said spinal plate further comprising an intermittent channel (26) extending along the length of the spinal plate, and intermittently expressed adjacent the apertures, and wherein the composition of said retaining element comprises at least one of titanium, titanium alloy, and stainless steel.

30. A spinal plate assembly as in Claim 27, the channel extending downwardly from the top surface of said spinal plate.

31. A spinal plate assembly as in Claim 29, the channel extending downwardly from the top surface of said spinal plate.

32. A spinal plate assembly as in Claim 27, further comprising band retainer structure securing the resiliently flexible band in said spinal plate assembly.

33. A spinal plate assembly as in Claim 29, further comprising band retainer structure securing the resiliently flexible band in said spinal plate assembly.

34. A spinal plate assembly as in Claim 32 wherein said band retainer structure is comprised in, and is an integral part of, said spinal plate.

35. A spinal plate assembly as in Claim 33 wherein said band retainer structure is comprised in, and is an integral part of, said spinal plate.

36. A spinal plate assembly as in Claim 10 wherein said resiliently movable band is under constant flexural stress.

37. A spinal plate assembly as in Claim 27 wherein said resiliently flexible band is under constant flexural stress.

38. A spinal plate assembly as in Claim 26 wherein said resiliently movable band is under constant flexural stress.

39. A spinal plate assembly as in Claim 29 wherein said resiliently movable band is under constant flexural stress.

40. A spinal plate assembly as in Claim 3 wherein at least all except two of said bone-fastener-receiving apertures comprise slots, having commonly oriented elongate axes enabling longitudinal movement of bone fasteners in said slots, with respect to said spinal plate after the spinal plate assembly is installed in a recipient user of said spinal plate assembly.

41. A spinal plate assembly, comprising:

(a) a spinal plate, said spinal plate having a length and comprising a top surface, a bottom surface opposite the top surface, the bottom surface being suitable for being positioned adjacent bone structure of a recipient user, and a plurality of bone-fastener-receiving apertures, said spinal plate further comprising an intermittent channel (26) extending along the length of the spinal plate, and intermittently expressed adjacent the apertures; and

(b) a retaining band mounted to said spinal plate, said retaining band being effective, when a bone fastener is driven through a said aperture into bone structure of a recipient user, and past said retaining band, as a consequence of driving such bone fastener, to activate a blocking feature of said spinal plate assembly, which blocking feature inhibits the bone fastener withdrawing out of said spinal plate assembly and past said retaining band.

42. A spinal plate assembly as in Claim 41 wherein the channel intermittently extends from the top surface of said spinal plate toward the bottom surface of said spinal plate, the channel having a side wall opening into a respective one of said plurality of bone-fastener-receiving apertures, said band comprising one or more bands disposed in the channel.

43. A spinal plate assembly as in Claim 42, further comprising band retainer structure mounting the retaining band in said spinal plate assembly.

44. A spinal plate assembly as in Claim 41 wherein said retaining band comprises a plastic composition which is safe for use in living human or animal bodies, as an implantable plastic, and which band has suitable strength, rigidity, and deflection properties to perform retaining functions in a routine implant use environment.

45. A spinal plate assembly as in Claim 44 wherein the plastic composition of the band comprises one or more materials selected from the group consisting of polyetherimide copolymer, acetal copolymer, polyethersulfone, polyarylethersulfone, polycarbonate, ultra high molecular weight polyethylene, polyetheretherketone, and polyaryletherketone.

46. A spinal plate assembly as in Claim 41 wherein composition of said spinal plate comprises at least one of titanium and titanium alloy.

47. A spinal plate assembly as in Claim 41 wherein composition of said movable retaining element comprises at least one of titanium, titanium alloy, and stainless steel.

48. A spinal plate assembly as in Claim 45, further comprising band retainer structure mounting the retaining band in said spinal plate assembly.

49. A spinal plate assembly as in Claim 47, further comprising band retainer structure mounting the retaining band in said spinal plate assembly.

50. A spinal plate assembly, comprising:

(a) a spinal plate, said spinal plate having a length and comprising a top surface, a bottom surface opposite the top surface, and a plurality of bone-fastener-receiving apertures, at least two of said bone-fastener-receiving apertures comprising slot-shaped apertures, all of the slot-shaped apertures having commonly oriented elongate axes along elongate dimensions of said slot-shaped apertures; and

(b) a retaining band mounted to said spinal plate, said retaining band being effective, when a bone fastener is driven through a said aperture and into such bone structure of a recipient user, to activate a blocking feature of said spinal plate assembly, which blocking feature interferes with the bone fastener withdrawing out of said spinal plate assembly and past said retaining band.

51. A spinal plate assembly as in Claim 50, said retaining band extending between first and second ones of said bone-fastener-receiving apertures and extending into said first and second ones of said bone-fastener-receiving apertures.

52. A spinal plate assembly as in Claim 50 wherein said retaining band comprises a plastic composition which is safe for use in living human or animal bodies, as an implantable plastic, and which retaining band has suitable strength, rigidity, and deflection properties to perform retaining functions in a routine implant use environment.

53. A spinal plate assembly as in Claim 52 wherein the plastic composition of the retaining band comprises one or more materials selected from the group consisting of polyetherimide copolymer, acetal copolymer, polyethersulfone, polyarylethersulfone, polycarbonate, ultra high molecular weight polyethylene, polyetheretherketone, and polyaryletherketone, and blends and mixtures of said materials.

54. A spinal plate assembly as in Claim 50 wherein composition of said spinal plate comprises at least one of titanium and titanium alloy.

55. A spinal plate assembly as in Claim 50 wherein composition of said movable retaining element comprises at least one of titanium, titanium alloy, and stainless steel.

56. A spinal plate assembly as in Claim 52, said spinal plate further comprising a channel extending from the top surface toward the bottom surface of said spinal plate, the channel having a side wall opening into and extending alongside ones of said plurality of bone-fastener-receiving apertures, said retaining band being disposed in said channel and extending along the channel.

57. A spinal plate assembly as in Claim 55, said spinal plate further comprising a channel extending from the top surface toward the bottom surface of said spinal plate, the channel having a side wall opening into and extending alongside ones of said plurality of bone-fastener-receiving apertures, said retaining band being disposed in said channel and extending along the channel.

58. A spinal plate assembly as in Claim 50 wherein all of said bone-fastener-receiving apertures comprise slots, having lengths greater than respective widths of said slots.